

Twenty-three stations reported no rain. The greatest monthly amount was 4.11 inches at La Porte. Considering the section as a whole the rainfall was deficient. The distribution, both in time and locality, was more uniform than is generally the case in October. The greatest snowfall was 14.5 inches at Tamarack, or about the same as last year.

## SUNSHINE.

The following table gives the total hours of sunshine and percentages of the possible:

Stations.	Hours.	Per cent of possible.	Stations.	Hours.	Per cent of possible.
Eureka.....	178	52	Sacramento.....	277	80
Fresno.....	324	93	San Diego.....	290	82
Los Angeles.....	283	81	San Francisco.....	244	70
Mount Tamalpais.....	267	77	San Jose.....	238	83
Red Bluff.....	272	79	San Luis Obispo.....	273	78

There was slightly more sunshine than during the same month of the preceding year.

## NOTES ON THE RIVERS OF THE SACRAMENTO AND SAN JOAQUIN VALLEYS FOR OCTOBER, 1911.

By N. R. TAYLOR, Local Forecaster.

*Sacramento watershed.*—There was practically no difference between the average stages of October and those of the preceding month in the Sacramento River above Red Bluff, and from Sacramento City to the mouth of the river. At Colusa and Knights Landing the river averaged from three-tenths to five-tenths of a foot higher than during September. The river, however, was generally below the October normal, especially during the last decade of the month.

Reports from the American River at Fair Oaks show that this stream averaged below the October normal, and that there was practically no current in the river after the 15th.

The various forks that drain the higher regions of the Yuba-Feather territory carried less water than for any month since that of September, 1908, but there was little departure from the usual October normal at any point in

the Yuba itself below its first fork or in the Feather below Oroville.

There was a deficiency in rainfall throughout the Sacramento watershed.

The Natomas Consolidated Co. is engaged in the construction of levees along the east side of the Feather River from Vernon to Marysville. This company is also closing all breaks in the levees on the south side of the Bear River, which, in future, will confine the water to this stream and prevent its overflow into the American Basin.

All levees that protect the Colusa Basin from the Sacramento River have been repaired or strengthened, and Reclamation No. 108, which now comprises 53,000 acres in the Colusa Basin, is throwing up back levees of unusual proportions as a protection against the drainage of the Coast Range foothills. These back levees will roughly parallel the Coast Range and will extend from Knights Landing Ridge to a point near Colusa. On the west side of these levees there will be a canal 17 feet deep and 150 feet wide which, it is thought, will be sufficient to carry the maximum discharge of all streams between Stony and Cache Creeks.

The river station at Monroeville has been abandoned, and a new station has been established in the Sacramento River at Jacinto, which is nine miles below Monroeville and nine and one-half miles below the mouth of Stony Creek.

*San Joaquin watershed.*—Excepting the San Joaquin River above Friant, where the extreme low water was practically reached, and the Tuolumne River, which was the lowest ever recorded during any previous October, or during any month, except September, 1909, all streams in this watershed maintained higher stages than those usually recorded during the month in question. This was notably so of the Stanislaus below Melones, the Merced below Merced Falls, and the San Joaquin between Mendota and Antioch. The run-off in the Calaveras was the greatest ever before known in October, and at no time during the month was Mormon Slough dry between Bellota and Linden.

A new river station has been established in the Mokelumne River at Bensons Ferry, which is just below the point where the Cosumnes and Mokelumne join.

New gages, to replace those washed away during the floods of last winter, have been installed at Lathrop and Bellota.